

The Applicants also thank the Examiner for having pointed out antecedent problems in claims 1, 8, 9 and 11 — and their dependent claims. It is believed that these errors have been corrected.

Section 112 rejections

In the Official Action it is suggested that claims 8, 14, 50 and 51 are not supported in the application as filed. It is said in the Action:

"The disclosure does not support the claimed velocity and accuracy."

First as to velocity, however, claim 14 now simply recites that the velocity used in setting up for color measurements is lower than the velocity used in marking with the pens. That condition is clear from portions of the present application, as indicated for instance in the paragraph bridging pages 35 and 36; and on page 41 at line 5.

Claims 8 and 51 say more specifically that the velocity is lower than 13 ips (5 cm/inch) — a conventional velocity for marking, as stated in U. S. 5,600,350 of Cobbs, et al. (column 8, lines 52 and 53). The Cobbs '350 patent is wholly incorporated by reference into U. S. 5,796,414 of Sievert et al.

Sievert in turn is wholly incorporated by reference into the present application. Accordingly the velocity now claimed is a fraction of the stated conventional velocity which is incorporated by second-generation reference in the present case.

Applicants would be glad to incorporate the recitations of Cobbs into the disclosure text in the present application explicitly, if the Examiner so wishes. (The Cobbs patent, and

the Beauchamp patent cited in the present application, are both coowned herewith; and some inventors in that Cobbs patent are also inventors of that cited Beauchamp patent.)

Turning next to positioning accuracy, it is said in the original specification (page 35, lines 27 through 31; emphasis added) —

"This auxiliary carriage can have very loose requirements. . . . Its positioning accuracy need be only sufficient to position the sensor over a relatively large test patch."

The previously recited numerical values for positioning accuracy have now been removed from the subject claims, in view of the objections in the current Official Action.

Claims 8 and 14 now recite only that the positioning accuracy is on the order of the dimension of a test-pattern mark; and claims 50 and 51 say simply that the accuracy is a fraction of that dimension. Applicants respectfully submit that these limitations follow directly from the above-quoted excerpt.

Applicants respectfully point out that the present form of these four claims has developed in response to rejection of the more generally couched original claims 8 and 14. That rejection in turn rested on the argument that a printhead auxiliary carriage in the Hirano inkjet-printing patent could be combined with the Beauchamp and Vincent test-pattern-reading patents to render obvious Applicants' original colorimeter auxiliary carriage.

Therefore the point of the present language in these four claims is simply to explicitly link the positioning accuracy with the reading of preprinted test-pattern marks. Logically speaking, the Hirano auxiliary printhead carriage does not anticipate or suggest any such link to dimensions of preprinted test marks, or to reading of such marks.

In the Official Action mailed September 26, 2001, the Examiner wrote (page 2):

"Claims 8 and 14 are objected to because of minor informalities:

"In claims 8 and 14, the phrases 'low velocity' and 'low positioning accuracy' are relative terms and may not be clear. It is suggested that applicant claim that the velocity and positioning accuracy is less than a certain amount."

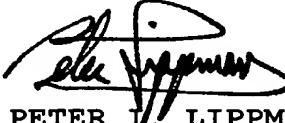
Applicants appreciate this suggestion and are attempting to follow it. In event the foregoing explanation of basis for the claims is not deemed persuasive, the Applicants respectfully ask the Examiner to advise what wording, if any, he would regard as acceptable for claiming this feature.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's favorable reconsideration and allowance of all the claims now standing in this case.

It is respectfully requested that, should there appear any further obstacle to allowance of the claims herein, the Examiner telephone the undersigned attorney to try to resolve the obstacle.

Respectfully submitted,



PETER I. LIPPMAN
Registration No. 22,835
Attorney for the Applicants

Ashen & Lippman
4385 Ocean View Boulevard
Montrose, California 91020

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TELEPHONE:
818/249-5961

MARKED-UP COPIES OF THE AMENDED AND NEW CLAIMS

For the Examiner's convenience all the claims have been placed in the claim sequence at the points where desired — in particular, with claims 50 and 51 following claims 8 and 14 respectively, and claim 52 after claim 50.

1 1. (twice amended) An incremental printer for forming
2 desired images on a printing medium, by construction from
3 individual marks in arrays; said printer comprising:
4 at least one colorant-placing module for marking on
5 such medium;
6 a colorant carriage for holding and moving the at least
7 one colorant-placing module [s] over such medium;
8 a motor and drive train for propelling said carriage
9 over such medium;
10 a first sensor, mounted to said carriage, for determin-
11 ing condition or relative positioning of the at least one
12 colorant-placing module;
13 a second sensor for making color measurements of mark
14 arrays formed on such medium by the at least one module;
15 an auxiliary carriage for holding and moving the second
16 sensor over such medium; said auxiliary carriage being
17 selectively attachable to and detachable from the colorant
18 carriage, but having substantially no drive train other
19 than that of the colorant-carriage drive train; and
20 means for controlling the motor and drive train, while
21 the carriages are attached, to position the colorant car-
22 riage and thereby the auxiliary carriage for substantially
23 stationary measurement of such a mark array on such medium.

1 8. (thrice amended) An incremental printer for forming
2 desired images on a printing medium, by construction from
3 individual marks in arrays; said printer comprising:

4 at least one colorant-placing module for marking on
5 such medium;

6 a first sensor [, mounted to said carriage,] for
7 determining condition or relative positioning of the at
8 least one colorant-placing module;

9 a second sensor for making color measurements of mark
10 arrays formed on such medium by the at least one module;
11 and

12 a mechanism for advancing the second sensor into a
13 measurement position at only low velocity and only low
14 positioning accuracy needed for roughly positioning [cen-
15 tering] the second sensor over successive colorimetric
16 test-pattern patches in turn;

17 wherein said low velocity is on the order of a fraction
18 of 13 cm (5 [1] inches) per second [, or less]; and

19 said low accuracy is on the order of [1/10] the
20 dimension of an individual mark [, or coarser].

1 50. (amended) the printer of claim 8, wherein:

2 the low positioning accuracy is a fraction of said di-
3 mension [on the order of 0.5 mm (1/50 inch), or coarser].

1 52. (amended) An incremental printer for forming desired
2 images on a printing medium, by construction from individu-
3 al marks in arrays; said printer comprising:

4 at least one colorant-placing module for marking on
5 such medium;

6 a colorant carriage for holding and moving the at least
7 one module [s] over such medium;

8 a motor and drive train for propelling said carriage
9 over such medium;

10 a first sensor, mounted to said carriage, for determin-
11 ing condition or relative positioning of the at least one
12 colorant-placing module;

13 a second sensor for making color measurements of mark
14 arrays formed on such medium by the at least one module;

15 an auxiliary carriage for holding and moving the second
16 sensor over such medium; said auxiliary carriage being
17 selectively attachable to and detachable from the colorant
18 carriage, but having substantially no drive train other
19 than that of the colorant-carriage drive train; and

20 a mechanism for advancing a component associated with
21 the second sensor into contact with such medium.

1 9. (twice amended) An incremental printer for forming
2 desired images on a printing medium, by construction from
3 individual marks in arrays; said printer comprising:
4 at least one colorant-placing module for marking on
5 such medium;
6 a colorant carriage for holding and moving the at least
7 one colorant-placing module [s] over such medium;
8 a motor and drive train for propelling said carriage
9 over such medium;
10 a first sensor, mounted to said carriage, for determin-
11 ing condition or relative positioning of the at least one
12 colorant-placing module;
13 a second sensor for making color measurements of mark
14 arrays formed on such medium by the at least one module;
15 an auxiliary carriage for holding and moving the second
16 sensor over such medium; said auxiliary carriage being
17 selectively attachable to and detachable from the colorant
18 carriage, but having substantially no drive train other
19 than that of the colorant-carriage drive train;
20 means for controlling the motor and drive train, while
21 the carriages are attached, to position the colorant car-
22 riage and thereby the auxiliary carriage for substantially
23 stationary measurement of such a mark array on such medium;
24 and
25 a mechanism for advancing a component associated with
26 the second sensor into contact with such medium.

1 11. (twice amended) An incremental printer for forming
2 desired images on a printing medium, by construction from
3 individual marks in arrays; said printer comprising:
4 at least one colorant-placing module for marking on
5 such medium;
6 a first carriage for holding and moving the at least
7 one colorant-placing module over such medium; and
8 a motor and drive train for propelling said first
9 carriage over such medium;
10 a second carriage, discrete from the first carriage,
11 for use in refining the quality of images produced by the
12 printer; said auxiliary carriage being selectively attach-
13 able to and detachable from the first carriage, but having
14 substantially no drive train other than that of the first-
15 carriage drive train; and
16 means for controlling the motor and drive train, while
17 the carriages are attached, to position the first carriage
18 and thereby the second carriage for substantially station-
19 ary operation in refining the quality of images.

1 14. (twice amended) An incremental printer for forming
2 desired images on a printing medium, by construction from
3 individual marks in arrays; said printer comprising:

4 at least one colorant-placing module for marking on
5 such medium;

6 a first carriage for holding and moving the at least
7 one colorant-placing module over such medium at a speed for
8 marking; and

9 a second carriage, discrete from the first carriage,
10 for use in refining the quality of images produced by the
11 printer;

12 wherein the second carriage scans a sensor over such
13 medium at only low velocity and only low positioning accu-
14 racy needed for roughly positioning [centering] the sec-
15 ond sensor over successive colorimetric test-pattern pat-
16 ches in turn; [and]

17 said low velocity is a fraction of said marking speed
18 [on the order of 3 cm (1 inch) per second, or less]; and

19 said low accuracy is on the order of [1/10] the
20 dimension of an individual mark [, or coarser].

1 51. (amended) The printer of claim 14, wherein:

2 said low velocity is a fraction of 13 cm (5 cm) per
3 inch; and

4 the low positioning accuracy is a fraction of said di-
5 mension [on the order of 0.5 mm (1/50 inch), or coarser].

[end of amendment]